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ABSTRACT

The Scholastic Aptitude Test (SAT) and undergraduate grade point average were examined as possible predictors of scores on the National Teacher Examination (NTE). The study population consisted of 166 education major graduates from North Carolina Central University (NCCU), a predominantly black institution, over a two-year period. The data on SAT scores, grade point averages, and NTE scores were analyzed using a multiple regression analysis. The SAT verbal, SAT math, and grade point average were found to be significant predictors of NTE Common Examination scores for the NCCU students. The SAT verbal and grade point average were significant predictors of Area Examination scores in one area, while only the SAT verbal was significant in predicting scores in a second area. The findings indicate that SAT scores may be acceptable predictors of NTE Common Examination scores. (Author/SW)

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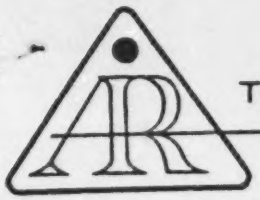

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A STUDY OF PREDICTORS OF NATIONAL TEACHERS EXAMINATION SCORES AT A PREDOMINANTLY BLACK INSTITUTION

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A STUDY OF PREDICTORS OF NATIONAL TEACHERS

EXAMINATION SCORES AT A PREDOMINANTLY BLACK INSTITUTION

The North Carolina State Board of Education adopted the National Teacher Examination (NTE) on April 6, 1960, for use in the teacher certification process in North Carolina. However, minimum score requirements were not adopted until 1964 for the Common Examination and 1966 for the Area Examination. At that time a minimum score of 450 was set for each examination. In 1967 the minimum score was raised to 475 for each test. By 1968 the Board revised the NTE regulations and adopted a composite score of 950 for the two examinations. From 1969 to 1973 temporary certificates were issued for one year to individuals who did not meet the minimum requirement. The NTE was dropped as a requirement for initial certification for one year (1974) and another evaluation instrument was adopted. Through court action the NTE requirement was temporarily discontinued on August 27, 1975.

At the request of the Attorney General's Office, the State Board of Education entered into a contract with the Educational Testing Service (ETS) to conduct a validation study of the NTE. This process was completed in 1976. The State Board of Education received a favorable written opinion from the North Carolina Attorney General on the action of the courts. Because of this legal opinion the NTE was reinstated as part of the certification process effective April 7, 1977.

The State Board of Education has a special test committee studying the NTE situation today and further recommendations will be made to the Board. The minimum score may be raised as a result of the validation study. (Taylor, 1977)

The State Department of Public Instruction is also in the process of developing other tests for the certification process in North Carolina. Preliminary plans call for a test to be given at the end of the sophomore year at the university as a requirement for initial entrance into the teacher education program. Another examination and the NTE will be given upon graduation for probationary certification into the teaching field. The probationary period will last three years at which time an evaluation will be made for permanent certification. (Taylor, 1978)

Purpose

The faculty at North Carolina Central University (NCCU), a predominantly black institution, has been concerned for some time about the low NTE scores of many NCCU students. Since a minimum cutoff on the NTE is presently required for certification in the State of North Carolina and given the relatively low passing rate of NCCU students (72% as compared to 92% statewide), some screening test to identify the students who may be expected to perform poorly on the NTE is needed. Because of limited resources within the university and because the state plans to initiate a comprehensive program within the next five years, several readily available predictors were evaluated. Specifically, the Scholastic Aptitude Test (SAT) was evaluated as a possible predictor for use in admitting students to the program. The third year grade point average (GPA) was evaluated as a possible

predictor of performance for use in counseling students near graduation.

This grade-point average is regularly computed for students prior to admission to student teaching and is thus readily available for use in counseling.

Methodology

The data for the study were collected from a variety of sources. The NTE scores were secured from the Education Department at NCCU. The GPA's and SAT scores were obtained from students' file folders and student records in the Education Department. Other data was collected by the UNC General Administration from other universities in the system. Complete data (re. SAT scores, grade-point averages and NTE scores) were available for 166 NCCU 1976-1979 graduates. Scholastic Aptitude Test (SAT) and NTE scores were obtained for students from the sixteen institutions in the University of North Carolina system in 1977. Only those data pertaining to black students were analyzed. The data were analyzed. using a multiple regression analysis. Three analyses were performed using the NTE Common Examination score as the criterion variable and two were completed using the NTE Area Examination scores as the dependent variables. The analyses are described below:

1. NCCU students' NTE Common Examination scores as the criterion variable and the SAT verbal (SATV) and math (SATM) scores as predictors.
2. NCCU students' Common Examination scores as the criterion variable and the SATV and the SATM and the third year undergraduate grade-point average (GPA) as the predictor variables
3. The NTE Common Examination scores of 207 black students

from the 16 campuses of the University of North Carolina as criterion variables and their SATV and SATM scores as predictor variables. (GPA was not available for this group)

4. The NTE scores of all NCCU students taking the Education in the Elementary School Area Examination as the criterion variable and the SATV, the SATM and the GPA scores as the predictor variables.
5. The NTE scores of NCCU students taking the Early Childhood Education Area Examination with the area scores as the criterion variable and the SATV and SATM scores and the GPA as predictor variables. Only the NTE Common Examination scores were used as predictors in the first three analyses since the NTE Area Examination is actually a series of individual examinations in various teaching areas.

Results and Dicussion

The correlations of the three predictor variables to be studied (SATV, SATM and GPA), with the criterion variable, NTE Common Examination scores (NTECOM) were computed . These correlations are presented in Table 1. Note that all three predictors correlate significantly with the criterion.

The primary purpose of the study was to select an efficient means of predicting the NTE Scores of students in the education program at NCCU. Therefore, predictors were selected on the basis of availability and ease of computation. For this reason only the SAT verbal and math scores were investigated as predictors to be used in the entrance to the program. Since the SAT verbal scores had the highest correlation with the criterion variable (NTE Common Examination

TABLE 1

Intercorrelation[1] of Three Predictor Variables to be Studied and NTE Common Examination Scores.

	SATV	SATM	GPA
NTECOM	r = .597	r = .415	r = .442
SATV		r = .401	r = .284
SATM			r = .398

[1] All correlations are significant ($p < .001$). The N for all correlations was 146.

Scores) that variable was investigated first. The R-square of the model in which the SATV score was used as a single predictor and the NTE common score was the criterion was .35 (the simple r given in Table III squared). The resulting model is presented below:

Predicted NTE Common Score = 282.0352 + .4659 (SATV) + error.

A second analysis was computed, adding the SAT math scores as a second predictor. The R-square was increased from .356 to .393.

An F-test (Battenberg & Ward, 1963) was computed to determine if the addition of SAT math scores significantly decreased the error in the model. The formula for this is given below:

$$F = \frac{(R_1^2 - R_2^2) / p_1 - p_2}{(1 - R_1^2)(n - p_1)}$$

Where R_1^2 = R-square of the full model

R_2^2 = R-square of the restricted model

P_1 = number of predictors in the full model

P_2 = number of predictors in the restricted model

The F, when the formula was applied to the current problem was 8.81. This is significant ($p < .05$, $p_1 = 2$ $p_2 = 1$), indicating that the addition of SAT math scores as predictors does significantly reduce the error variance in the model. The recommended model for predicting the program success on the NTE common scores for NCCU student is thus:

Predicted NTE Common Scores = 211.5775 + .5724 (SATV) +
.2304 (SATM) + error

The second problem of interest in the current problem was whether the undergraduate grade-point average of the student would be a useful predictor. Since the only readily available grade-point averages are those computed just prior to student teaching (at the beginning of the last year or last semester of training) this variable would obviously not be useful as a predictor for admission to the teacher education program. However, the NTE score results are of great concern to the student and it was felt that if the addition of the GPA as a predictor further reduced error variance, than it might be useful in counseling students preparing to take the NTE examinations. A third analysis was run, adding GPA as a third predictor. Applying the same formula, the addition of GPA as a predictor was found to significantly reduce the error ($F = 14.18$, $P < .001$). The resulting model is:

$$\text{Predicted NTE Common Scores} = 139.0552 + .5298\,(\text{SATV}) + .1337\,(\text{SATM}) + 41.6649\,(\text{GPA}) + \text{error}$$

The data presented in the previous analyses were for students at NCCU. The NTE scores of students at the other campuses of the UNC system were also available. Though the data was limited to one year (1977), and all students who took the NTE that year were not included, a comparison was felt to be useful. Since all of the NCCU sample was black, only the scores of black students in the statewide sample were examined. Both the SATV and SATM were found to be significantly related to the NTE Common Examination scores. (F'_s = 101.08 and 14.68 respectively, d's= 1,142 and p's < .001). Thus the analysis of the state-

wide data is consistant with the analysis of the NCCU data, though the R-square was comparatively higher (.53). Further testing of a larger statewide sample is being conducted under the direction of the UNC General Administration.

The intercorrelations of the three predictor variables with the NTE Area Scores of those students taking the Education in the Elementary School Area Examination (for Grades 4-9) are presented in Table 2.

The primary purpose for developing the area examination scores model was for use as a counseling aid for students already in the program. For that reason, all three predictor variables were examined to determine what combination would give the simplest equation with the smallest error. The model in which only SATV served as a predictor was significant ($F=21.42$, $d = 1, 36$, $p < .001$). However, GPA was found to significantly decrease the error variance ($F=13.76$, $p_1=2$, $p_2=1$). The SATM scores, however, were not found to reduce the error in the model significantly. The model selected for counseling the student in the Grade 4-9 program is given below. The reader should note that the N (38) is marginal for a regression model with two predictor variables and that the R-square of .54 may be somewhat inflated for the same reason.

Predicted NTE Area Score (4-9)= 24.79 + .7399 (SATV)

+90.3.84 (GPA) + error

As indicated earlier, there were only two area tests for which the number of students justified development of a regression model.

TABLE 2

Intercorrelations[1] of Three Predictor Variables with NTE Area Examination Scores (4-9)

	SATV	SATM	GPA
NTEAREA (4-9)	.611[2]	.541[2]	.581[2]
SATV		.616[2]	.309
SATM			.372[3]

1. The N for all correlations was 38.
2. $p < .001$
3. $p < .05$

The second of these programs is the kindergarten through third grade (K-3) program. Students in this program take the Early Childhood Education Area Examination. The intercorrelations of the three predictor variables with the scores on this area are given in Table III.

Since the purpose of developing the model was for use in counseling of students during the semester (or academic year) prior to taking the NTE, all three predictors were examined to determine the best model. For this subset of the population, only the SATV was found to be a useful predictor. The GPA marginally reduced the error variance but the reduction was not significant ($F=3.44$, $p_1=2$, $p_2=1$, $p > .05$). The model chosen is given below. Note as with the previous model, that the N is somewhat low (50).

Predicted NTE Areas Score (K-3)= 267.48 + .7315 (SATV) + error.

Conclusions

Based on these analyses, two immediately useful models have been developed. The first employs SATV and SATM scores as predictors of the NTE Common Examination Score. This model will now be validated on a subsequent group of students and then used to advise students on admission to the program. This counseling function is particularly important since a minimum score on the NTE is required before a permanent teaching certificate will be granted by the State of North Carolina and because the common examinations are, in theory, less sensitive to teacher education program than are the area examination scores. The NTE Common Examination measures broad knowledge rather than specific material covered in the education curriculum.

TABLE 3

Intercorrelations[1] with Three Predictor Variables with NTE Area Examination Scores (for Grades K-3)

	SATV	SATM	GPA
NTEAREA (K-3)	.505[2]	.226[3]	.389[3]
SATV		.219	.369[3]
GPA			.390[3]

1. The N for all correlations was 51.
2. $p < .001$
3. $p < .01$

The other model that can be validated immediately is the model in which all three potential predictors (SATV, SATM and GPA) of NTE Common Scores are included. This model will be useful in counseling students in the months prior to administration of the NTE Examination.

The two remaining models, those developed to predict the 4-9 and K-3 Area Examination Scores are potentially valuable, but the number of subjects in both cases is quite small and further development on a somewhat larger sample is needed before those two models can be validated.

This study has immediate value for the teacher education program at NCCU. The methodology used in this study may be potentially useful to other institutions. At the present time twenty-one states require "some part or all of the NTE" in their teacher certification and selection process, and more are expected to require the NTE or some other standardized test in the future. The Supreme Court has accepted the use of the NTE for making certification decisions in South Carolina and has approved its use in promotion decisions at the local level (ETS, 1978). Obviously, a test which would predict NTE scores of teacher education candidates would be of great use to many institutions, either as a tool to select the best qualified students or to recommend early remediation for weaker students. The test should be one that has already been administered to the students (SAT and ACT would be examples) or tests that are simple and inexpensive to administer (the Stanford Achievement Test is one example). The results of this study indicate that SAT scores may be acceptable predictors of NTE Common Examination scores.

Certainly, any Institutional Research officer should examine the

adequacy of such tests as the SAT before beginning the more expensive process of developing a test to use in screening applicants for teacher education.

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